

HELP SCREEN

MORE ANSWERS THAN THE ORACLE AT DELPHI

If you were an ancient Greek with a software problem you couldn't hire a consultant - there weren't any. No, you had to travel the dusty miles to Delphi to ask those tricky questions. When you arrived there were offerings to be made (oracles don't work for free, you know). And after all that, did you get a straight answer? No, you got it encrypted, and without the key.

These days you can enquire from the comfort of your own armchair, the answer is free and I hardly encrypt it at all - no wonder folk prefer to write to Help Screen rather than ask at Delphi. Unfortunately, due to pressure of work, I can't answer letters on a personal basis - only through the pages of PC PLUS, though I will try to acknowledge those that arrive with an SAE. For the same reason, I can't accept telephone enquiries either.

Nevertheless, I do want your input. If you're a newcomer to the exciting world of PCs then you may need a helping hand over the rough parts - feel free to ask. All questions welcome, the answers are usually relevant to many others.

The experts among you can use these pages to pass on a little learning. Perhaps even to show off. See your name in print and gain some fame all in exchange for a few lines of hard-won wisdom. There will be tricks you've learned that make computing easier. Let others know the problems and the solutions - they often cast a little light on other problems as well.

It doesn't matter whether you think they're important, your experiences could save someone else hours of

frustration. Share the thrill of discovery with us - in all its gory detail, please - and be in with a chance at a total of £50 worth of real money I'm trying to give away every month. Send those tips to Steve Patient, Help Screen, PC PLUS, 30 Monmouth St, Bath, BA1 2BW.

 This symbol indicates a query or a tip from someone just starting out with the PC. Either someone for whom all computing is new or perhaps a reader moving up from a different machine. Either way it should be self explanatory.

 This is the hackers' haunt. Nothing is too technical for this section. Some may find it more baffling than enlightening but it offers something to get your teeth into.

 Just because you use your PC every day doesn't mean you're not occasionally going to be baffled. This is the heading for tips on batch files, pop-ups and utilities.

 Danger area! Some of these tips can lead to tears before bedtime. Handle them with extreme caution and remember, PC PLUS can't be held responsible for any data loss or other damage - you have been warned!

 This indicates a letter concerning the SuperDisk. Advice on using the programs and new twists to old favourites. Special Help Screen listings are also featured on the disk.

DATED SOFTWARE

Why does so much of the software on the SuperDisk expire after a few months? I receive my copy of the magazine up to three months late (it has to come by surface mail) and because of this I frequently can't use the software at all. Mohit Agarwal
Bombay

Most commercial software suppliers are reluctant to give away the programs their livelihoods depends on. On the other hand, they want to show potential customers how good their software is.

There are several courses of action they could take. The least satisfactory from the users point of view is the non-interactive demonstration program. This shows off the program but you can't do anything with it. We have a policy of not publishing these.

A second course of action is to remove features from a program. But then the program appears inferior to the commercial version - and perhaps that will put customers off, too.

A popular choice is to include extra screens or pop-up messages reminding you that you don't own the program and suggesting you should buy a copy without these irritating screens in it - this is a very effective approach.

Finally, there is software that dies after a specific date. This allows the user to test it for a while and decide whether or not they'd like to buy it. This can usually be run after that date by resetting the date in your

PC - though it's usually just irritating enough running with the wrong date to persuade people to buy a 'real' copy.

NO INCREASE

Is there any equivalent in Zortech C of the Turbo Pascal SetTextStyle function for changing character size and type? Chris Sargent
Portsmouth

No. The Flash Graphics libraries are only concerned with drawing commands. You'd have to do it all from scratch.

DIRTY PICTURES

Most of the time my monitor displays patches near the border of the screen. For example, if the whole screen is red then purple, brown and yellow patches show up. The same effect can be achieved by placing a powerful magnet near the screen - but there isn't one anywhere near my screen. Ludwig Flasch
Malta

It sounds as if at some stage there has been a magnet near the monitor long enough to permanently affect it. Less likely is that it wasn't degaussed (the technical term for randomising magnetic influences) correctly when manufactured. Any good TV technician can degauss it (which simply means that it will be demagnetised) and it should then work properly.

LIMITED LABELLING

Could you help me with a problem I'm having with the Labels Unlimited label printing package. I'm using it with a laser printer. The problem is that the program only works with American letter size paper and I can only find suppliers of A4 laser labels. Power Up, who supplied the software, says nothing can be done. Do you know of a supplier of letter size sheets of laser labels? Keith Bruce
Jedburgh
Scotland

American letter size is 11 inches by 8.5 inches. Unfortunately, I can't track down a UK supplier of laser labels in this size either. I think your only effective course of action is to order direct from the US - either yourself or via a dealer.

Anyone else who needs laser labels should check that the software they intend to use supports them. MASS on (0603) 630768, produces Super Labeller which works with A4 laser labels. The company supplies a range of labels (including A4 laser labels) along with the product.

RAINBOWS

I would welcome advice on which printer driver to select in Wordperfect 5.1 to run my Star LC-10 colour printer. I have tried the obvious choices with no success. A friend of mine seems to think that

WordPerfect 5.1 doesn't support colour properly. I can make it work by inserting control codes in the text but this seems clumsy.

M J Dunning
Maidstone

Say what you like about WordPerfect but one thing you have to admit is that it supports just about every feature anyone working with text could ever conceivably need – it's just a matter of finding it among all the others.

In this case the problem is that the Star LC-10 is known as the NX-1000 in the US. If you select the NX-1000 Rainbow on the print select menu ([Shift][F7][s]) you should be all right.

SAFETY FIRST

 Since discovering that data I'd copied on to floppy disk for courier transport to the wilds of Scotland was unreadable at the other end I always copy with the /V option. Don't put your trust in MS-DOS.

H Meacham
London

This is an expensive and irritating lesson to have to learn – but it's one we can all learn something from. The suggested /V option forces MS-DOS to read back the information that's it's written to disk – ensuring that it is really there.

AMSTRAD ANSWERS

GREY SCALES

 My Amstrad 2086 has a monochrome VGA monitor and its driving me insane. I can't see what the WordPerfect spell checker is trying to check – I can't even see what cards I'm using in Colossus Bridge.

What I want is colour. What I need to know is whether or not I will need a new VGA card and what nice cheap colour VGA monitor will work on my 2086? Can I get a build it yourself kit?

N H Coxon
Crookes
Sheffield

You can fit any VGA colour monitor you like on the 2086 and it will work – no need to change adaptor cards or anything else.

As to nice and cheap, well that's an oxymoron – it's either nice or it's cheap. You need at least a 0.31mm dot pitch on a 14-inch monitor. That will cost you around £250. Cheaper monitors often lack adequate resolution, resulting in fuzzy text. This will make your head ache with prolonged use. Best to try and buy one you've seen and liked.

CURSOR TRACKS

 I am having an irritating problem with GEM. I upgraded from my Amstrad PC1512 to an Amstrad 2286 and naturally assumed that I could take my Basic2 programs with me. It's true that they run perfectly well but when I drag the

CORRECTION TIME

 In the April issue of PC PLUS you said that you could put a Western Digital file card into an AT and call it type 0 to get it to work. It doesn't.

John Nelson
Glasgow

Mea culpa – I failed to pursue the reply I got from my hard disk expert. Further conversations (and a little more checking) demonstrated that you don't get offered a type zero hard disk on the BIOS setup in most ATs. What you have to do (if your AT BIOS allows it) is to tell it you don't have a hard disk – which is what my expert meant by a type zero. The normal POST (Power On Self Test) should then find the hard disk BIOS on the file card and initialise it correctly. Alternatively, you must disable the card BIOS (though this option is not always possible).

You can't usually do this in a system that already has a hard disk controller – apparently they argue. The definitive answer appears to be that sometimes you can do this and sometimes you can't. Good documentation is the best help you can have in any specific case. This is all rather interesting to me since I intend to try something similar myself when I upgrade my own XT motherboard in the next month or two. Any real life success stories (with details) would be appreciated.

4DOS REPRISE

 Having ordered a back issue of PC PLUS, August 90, I tried out the 4DOS command replacement package and have met with disaster. My XT system has a 20 Mbyte hard disk with the Ability package. I tried to load 4DOS in the other programs section of the software. Once loaded I tried to get back to Ability and couldn't.

I also can't reboot the system – I get the following error message:

4SOS Initialisation error - can't find exefile
Fatal error - please reboot

Drive C won't reboot and the system just disregards any disk present in drive A: this was tried, but only produced the message:

Disk Boot Failure

Can you please advise?

R Sturrock
Ferryden

The problem is that the 4DOS installation is incorrect. It is essential to read software installation instructions – especially in the case of programs that alter the way your PC behaves. 4DOS replaces COMMAND.COM, which is the program that

GRAPHICALLY SPEAKING

 I originally bought an Amstrad PC1640 with an MD monitor (mono). This was all right while I was only doing word processing and spreadsheet work, but now I find I need graphics.

Many games provide no picture at all and the CGA emulators I've tried seem to be a bit hit and miss. I'm not too worried about colour, but is there any upgrade I can possibly buy to get graphics?

E J Adams
Wimborne

The mono PC1640 display emulates the Hercules standard, and is perfectly capable of displaying graphics (it was the main reason for its success). So programs that support Hercules will produce graphics. I assume that the real problem is either games that won't run (few of those support Hercules) or that you really do want colour. Either way your best bet is to upgrade to VGA colour.

This is perfectly possible with the PC1640. Unlike the PC1512 the internal graphics adaptor can be disabled. You still need the monitor as a power supply but it can live under a desk, out of sight.

There is a bank of DIP switches on the back of the system box. To disable the built-in internal graphic adaptor turn switch 10 to OFF. After that the ones you are interested in are 6 and 7. The possible settings for these are as follows:

puts the prompt on the screen and interprets the words you type in.

As with COMMAND.COM, MS-DOS must know where to find 4DOS for your machine to be able to run. Running it from within the Ability directory was clearly not a good move. You've lost your COMMAND.COM file without gaining a fully-working replacement. However, you should still be able to boot from the A drive, which is the default (the PC always looks there first for a disk containing MS-DOS).

It still is looking there because it's giving you the 'Disk Boot Failure' message. This means that the disk doesn't have the MS-DOS operating system on it (or it's corrupted in some way). Go back to your original MS-DOS installation disk and boot from that, or failing that, borrow one (make sure it's the same version of MS-DOS you use on your machine).

Once booted you should then be able to get back on to the C drive and put things right from there. Not being familiar with your setup, I can't say exactly how you should proceed, but a simple solution could be simply to rename CONFIG.SYS and AUTOEXEC.BAT to something else (to eliminate all references to 4DOS), copy COMMAND.COM across into the root directory of the hard disk (it really must be from the correct version of MS-DOS or it won't work) and reboot.

A simple alternative CONFIG.SYS file to get things working correctly would

FREE FACTS

Recently, while exploring batch files, I came up with an idea that may be of interest to other readers - an address and telephone book based on a batch file.

```
ECHO OFF
IF "%1"=="" GOTO HOWTO
GOTO %1
:SMITH
ECHO JOHN SMITH
ECHO 11 ELDER WAY
GOTO END
:JONES
ECHO ROD JONES
ECHO 34 MAY DRIVE
GOTO END
:WHITE
ECHO CHALKY WHITE
ECHO 23 ELM PARK
GOTO END
:MILLER
ECHO DUSTY MILLER
ECHO 67 LILAC CLOSE
GOTO END
:HOWTO
ECHO USAGE IS: ADDRESS [NAME]
:END
```

It isn't designed to replace a professional-quality database but it works well for personal name and address lists. Those with the same surname can be entered under the

same label and even formatted to print across the screen. Similarly, a list of useful telephone numbers could be included so that

typing ADDRESS TEL puts them all on the screen in one go. You could probably fit forty or fifty on one screen. This batch file idea is easy to modify to suit your own needs.

Nabil Asaad
Harrogate



I like this idea, and I hope you don't mind me modifying your original submission slightly to make it easier to enter data. The nice thing about it is that you can use

it in so many different ways. It will run from the command line or from a program shell, you can also examine it, modify it and save it from any word processor or text editor.

The same idea would be useful for any kind of data that you need to access on an occasional basis. Because it needs to be edited all the time compiling it seems pointless - so I'm awarding you a cash prize instead.

fonts described in the manual so what am I doing wrong?

Raymond Jones
Morecambe

You aren't doing anything wrong, it's a limitation of the LQ3500di that italics are only available in Epson draft mode. Only by using a package that prints all its characters in graphics mode (a desktop publishing program) will you get reasonable italics.

BROKEN WINDOWS

I have an Amstrad 2386 with 4 Mbytes of RAM and yet I cannot get Windows 3.0 to run in enhanced mode. It always comes up in real mode.

Roger Hall
London

Clearly, Windows 3.0 thinks you have no extended memory available. This is perfectly possible on the PC2386 since memory can be set up as either extended or expanded in the CMOS. This is usually the case in 80286-based machines but rare in 386-based machines and it can cause some confusion.

Type **SETUP** to run the CMOS setup utility and see what it says about the way your computer's memory is arranged. If you plan to use Windows, set it all to extended memory since the Windows memory manager EMM386 can convert extended memory to expanded memory in software - a much more flexible arrangement.

6 7 Adaptor

on	off	40 col CGA
off	on	80 col CGA
on	on	Hercules/MDA
off	off	VGA/EGA

When you fit your VGA card and new VGA monitor, set six and seven off. You'll find more information on changing adaptors on page 451 of the PC1640 manual.

SLOW MICE

I own an Amstrad PC2086 with a 30 Mbyte hard drive, 12-inch VGA display and an external 5.25-inch drive. Every time I use AUTOMAKE, the menu definition utility with Automenus, the computer clock slows down to about a third of its normal speed. When I reboot the computer the clock is running correctly and the time is correct.

This problem doesn't seem to cause any harm but it is irritating. Is there a solution?

Jon R Stanton
Rochford

Yes. Amstrad's mouse drivers set the clock tick to three times its normal rate in order to get a faster response to mouse movement. It then passes on every third tick to the system so that everything appears normal. However, many programs reset the tick to what it should be when they quit (usually because they are tidying up after also setting it high in order to get a faster response). These include

QuickBASIC, Optune and many games. Since the mouse driver continues to pass on only every third tick this results in the system clock appearing to run at one third normal speed (though the real time clock built into hardware keeps correct time, which is why everything is correct after a reboot).

Amstrad had a lot of complaints about this problem on the PC1512 and PC1640, and provided a fix. You can run the mouse driver with a parameter /S, which stops it playing with the clock - and you'll notice very little difference.

This applies to all the Amstrad machines including the PC1512 and PC1640, though only drivers from revision 5.003b (you'll see the version number when you run it).

Amstrad technical support tells me that updates of all the mouse drivers, and fixes for a variety of other problems, are available to anyone sending a blank disk labelled with their name and address and the driver required (an SAE helps to get things moving too). Write to:

Amstrad plc
Technical Support
169 Kings Rd
Brentwood House
Essex CM14 4EF

DOTTING THE I

Despite my best efforts I cannot get my Amstrad LQ3500di printer to recognise the control codes for italics in letter quality printing. I can get all the other

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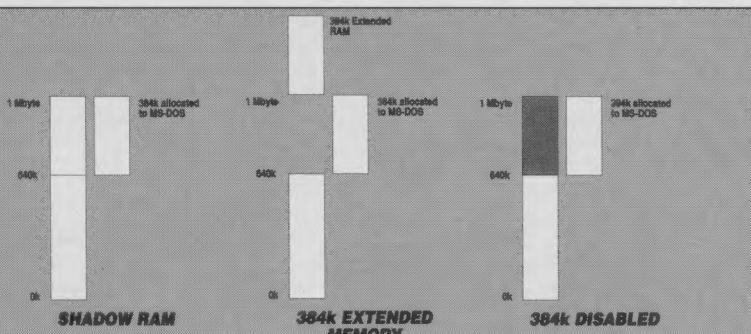
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A LITTLE OF WHAT YOU FANCY

 After recently purchasing a Packard Bell 386SX with 1 Mbyte of memory I would like to use the extended memory as expanded memory. I contacted my supplier who told me I would have to use third party software for this. Please could you recommend a suitable piece of software that would do the job.

Christian Cundall
Southport

There are a number of suitable memory managers. The most sophisticated is QEMM 386 from Quarterdeck Systems (0254 496699). You could also try 386MAX from IDS 071-631 0548. DR-DOS 5.0 comes with its own memory manager, EMM386, as does Windows 3.0. Any of these will convert extended memory to expanded memory.

This question of 1 Mbyte machines is interesting. 1 Mbyte is fitted because the

● The 1 Mbyte of memory on AT and SX PCs can be used in several ways. It can be disabled, so that there is no access to it. It can be used as shadow RAM for faster access to ROM code or it can be remapped to the area above 1 Mbyte as extended memory

machine design means that memory can only be fitted in megabyte increments (and you thought it was just generosity).

With a 1 Mbyte machine there is a slight problem in that the top 384K is reserved for MS-DOS. That's where the video memory and all the ROM BIOS lives, for example. On some 1 Mbyte machines the top 384K of conventional RAM is simply not available – which is somewhat irritating. On others it can only be used as shadow RAM, which is RAM into which video and other ROM code is copied for faster access.

Most useful, though, is to map it to the area above 1 Mbyte as extended memory. This can then be used as a RAM disk or expanded memory as well. On machines with this feature the CMOS setup routines usually enable extended or shadow RAM or even disable access completely.

read like this:

COUNTRY=044
BUFFERS=20
FILES=40

Once things are running again you can print out your old, renamed, AUTOEXEC.BAT and CONFIG.SYS files and decide what you need to put back into the new versions.

4DOS is generally very good, but probably not worth installing unless you know there are things you want to do on the command line that COMMAND.COM won't let you do. If you aren't aware of any limitations then you don't need it. The version on the SuperDisk also had some faults we weren't aware of at the time. These were responsible for at least some of the problems reported in issue 55 (DYING TO GO BACK) and wrongly attributed by me to a hardware problem. The latest version of 4DOS has cured the worst of the bugs. On the other hand – COMMAND.COM appears to have no serious bugs at all.

WRONG ROUTE

 At present I am using a Compaq SLT/286 portable, and would like to connect this to my Philips CM8833 14-inch CGA monitor. However, when I tried to purchase a lead I was told that one isn't available, only leads for a VGA monitor.

If this is correct would you provide the pin out details of the SLT so that I can make my own lead?

Tony Guinness
by fax

► 276

Unfortunately, this isn't simply people being

ENVIRONMENTALLY FRIENDLY

 Batch files can check environment variables and act in different ways depending on how they are set. For example, a batch file might perform a backup if the variable DAY equals FRIDAY. The problem is that while a human can

```
ECHO OFF
CLS
REM This batch file uses the DATE & TIME commands two create
REM batch files. These are invoked in turn.
REM When they chain back to this batch file,
REM time, or day + date are passed as parameters %3 and %3, %4.
IF NOT "%ECHO%"==""
ECHO %ECHO%
rem CURRENT.BAT
IF (%1)==() GOTO SETUP
IF (%1)==(date) GOTO SETDATE
IF (%1)==(time) GOTO SETTIME
:SETUP
REM ECHO and MORE are to get a [CR] into DATE
ECHO ANY NON BLANK STRING | MORE | DATE > \DDATE.BAT
ECHO ANY NON BLANK STRING | MORE | TIME > \TTIME.BAT
\DATE
:SETDATE
SET DAY=%3
SET DATE=%4
:SETTIME
SET TIME=%3
DEL \DDATE.BAT
DEL \TTIME.BAT
ECHO.
ECHO The environment variables DAY DATE & TIME have been set up
ECHO as shown.
ECHO.
SET
```

type DATE and see if the day is Friday, a batch file can't. However, I have a technique for getting the screen output of the DATE and TIME utilities into environment variables. The batch file illustrates the technique.

What happens is that the batch file

CURRENT.BAT runs three times. The first time there is no parameter so goes to :SETUP and runs DATE and TIME. The output from these is redirected to the files DDATE.BAT and TTIME.BAT.

It then hits DDATE which is the name of one of the new batch files – so it runs it. The first word in DDATE is Current so it runs CURRENT.BAT again with the rest of the message passed as parameters. %1 is 'date' so the batch file goes to the label :SETDATE and sets the appropriate environment variable. TTIME is then run which invokes CURRENT.BAT yet again with 'time' as %1 – so the batch file jumps to :SETTIME and sets a different environment variable (TIME). It then deletes the temporary batch files and displays the new variables. It only works because the first word of the output is the same as the batch file.

Michael Perryman
Redhill



FILES ON THIS MONTH'S
SuperDisk

As a means of reading standardised information off the screen this works well. Included as part of your AUTOEXEC.BAT file CURRENT.BAT will make sure that batch files always have access to the day and the date – I'm not so sure how you'd use the time though.

VGA COLOUR SPECIAL

 Over the last few months I've had a number of letters on the subject of VGA palettes. Those quarter of a million possible colours sound wonderful - yet you only have the standard 16 to play with it seems. Well, let's fix that, but first some background.

The VGA acronym actually refers to the electronics behind the display rather than the display itself. It stands for Video Graphics Array; and it's quite an array. There are a total of 262,144 possible colours. Of these you can choose 256 in the most colourful VGA mode. In normal text mode and high resolution graphics mode you get 16 of those 256 colours. These are chosen to match the default colours of the earlier EGA display - so that programs look the same on both

systems. However, there's nothing to stop you assigning different colours to the default colour set.

To do this you need to access the DAC (digital to analogue converter). This is where the 256 colours are stored. Each one is stored as three 6-bit numbers. 6-bits gives 64 possible numbers and 64 by 64 by 64 gives the 262,144 possible alternatives. The 16 colour palette is actually just 16 pointers to DAC registers.

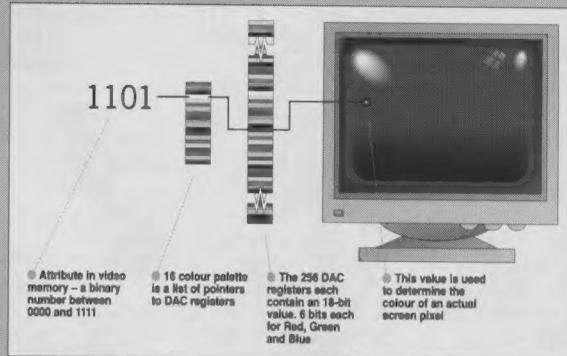
Now, you might think that the sensible thing would be to make the 16 colours the first 16 of the 256 - but it isn't so. In order to change our sixteen colours we first need to find which AC register they point at, then change that one. Luckily there are video BIOS interrupts services to find the DAC register for a colour, read that DAC register and write to it. The

QuickBASIC routine shown uses all three in that order. Note that it has to use interrupts, which means it must have the interrupt library loaded. Do this with the line:

QB /L QB

when invoking QuickBASIC. Any alteration you make to the DAC registers are lost when you turn the machine off. Also, the MODE C080 command will reset them to the default values. Some programs also reset the DAC registers for their own purposes.

Time pressures prevented us getting this listing on to the SuperDisk, but next month, as a bonus, we'll include a version that will not just create user defined palettes, but save them and load them as well.



```
'Bye David
DEFINT A-Z
'$INCLUDE: 'qb.bi'
DIM dave AS regtype
CLS
LOCATE 8, 40: PRINT "7 - Lose red 9 - Gain red"
LOCATE 9, 40: PRINT "4 - Lose green 6 - Gain Green"
LOCATE 10, 40: PRINT "1 - Lose blue 3 - Gain blue"
LOCATE 11, 40: PRINT "Q - Quits"
LOCATE 13, 40: PRINT "Use numeric keypad"
LOCATE 1, 1
FOR p = 0 TO 15: COLOR p: PRINT " "; STRING$(8, CHR$(219)): : PRINT:NEXT
col = 1: oldcol = 2
DO WHILE 1
    dave.ax = &H1007
    dave.bx = col - 1
    CALL interrupt(&H10, dave, dave): 'get the DAC register number
    dacreg = dave.bx / 256
    dave.ax = &H1015
    dave.bx = dacreg
    CALL interrupt(&H10, dave, dave): 'read DAC register
    r = (dave.dx / 256): g = (dave.cx / 256): b = (dave.bx AND 255)
    LOCATE col, 2: PRINT CHR$(26): LOCATE col, 11: PRINT CHR$(27)
    LOCATE oldcol, 2: PRINT CHR$(32): LOCATE oldcol, 11: PRINT CHR$(32)
    oldcol = col
    DO WHILE oldcol = col
        LOCATE 4, 40: COLOR 15
        PRINT "Colour ="; col - 1; " R ="; r; " G ="; g; " B ="; b; " "
        g$ = INPUT$(1)
        IF g$ = "8" THEN col = col - 1 ELSE IF g$ = "2" THEN col = col + 1
        IF g$ = "7" THEN r = r - 1 ELSE IF g$ = "9" THEN r = r + 1
        IF g$ = "4" THEN g = g - 1 ELSE IF g$ = "6" THEN g = g + 1
        IF g$ = "1" THEN b = b - 1 ELSE IF g$ = "3" THEN b = b + 1
        IF g$ = "q" THEN
            dave.ax = &H4C00
            CALL interrupt(&H21, dave, dave): 'quit program via BIOS
        END IF
        IF r > 63 THEN r = 63 ELSE IF r < 0 THEN r = 0
        IF g > 63 THEN g = 63 ELSE IF g < 0 THEN g = 0
        IF b > 63 THEN b = 63 ELSE IF b < 0 THEN b = 0
        IF col < 1 THEN col = 1 ELSE IF col > 16 THEN col = 16
    dave.ax = &H1010
    dave.bx = dacreg
    dave.dx = r * 256
    dave.cx = (256 * g) + b
    CALL interrupt(&H10, dave, dave): 'write DAC register
    g$ = ""
LOOP

```

LOCKTIGHT

 I have an Amstrad PC3286 at home which is fine but for a minor niggle. After booting up I am left with the Num lock key on. At work this is not the case. Is there a simple way to turn it off at boot up time?

A Ridly
Bridgenorth

Yes, there is. The two little DEBUG files below act to switch Num lock off and on respectively. It can easily be adapted for the other toggle keys as described below. There are caveats though. While this works on all the machines I was able to test it on – including a generic XT, those who know more about these things than I do don't recommend playing with the byte where this information is logged – so do so at your own risk. For example, I was able to lock up my machine by setting both Shift keys, the Alt and Ctrl keys at once. However, the toggle keys (Insert, Caps, Num and Scroll lock) appear to be safer.

```
NINUMOFF.COM
RCX
10
A
MOV AX, 0040
MOV DS, AX
MOV AX, 20
MOV [0017], AX
MOV AH, 4C
INT 21
```

```
MOV AX, 00
MOV [0017], AX
MOV AH, 4C
INT 21
```

W
Q

And now for Num lock off

NINUMON.COM

```
RCX
10
A
MOV AX, 0040
MOV DS, AX
MOV AX, 20
MOV [0017], AX
MOV AH, 4C
INT 21
```

W
Q

These must be saved as ASCII files (that means no control codes or formatting information except carriage returns). Feed them into DEBUG like so:

DEBUG < NUMOFF.BUG

which will produce a COM file. Use this as



a command in your AUTOEXEC.BAT file to turn off Num lock at boot time.

For those who wish to experiment the byte where the shift and toggle information is kept is at hex address 0040:0017, and is constantly updated by the PC BIOS. It's particularly useful for programmers who wish to distinguish between the two shift keys, for example, or set caps on in software. The bits in the byte reflect the state of the keys as shown below:

76543210	
*	Insert 1=on 0=off
*	Caps lock 1=on 0=off
*	Num lock 1=on 0=off
*	Scroll lock 1=on 0=off
*	1=Alt pressed
*	1=Ctrl pressed
*	1=Left shift pressed
*	1=Right shift pressed

To turn Num lock off the BUG file sets the whole byte to zero – to turn it on it sets bit five on by making the byte equal 32. On AT style machines the keyboard lights will reflect the state of the bits when you alter them though an XT keyboard won't. This means that if you alter the key toggle bits on an XT the lights will not necessarily reflect the way the keyboard responds.

WISDOM OF SOLOMON

Dr Alan Solomon finds time to muse on the limits of laptops while winging around the world. He also earns the gratitude of buyers and sellers alike.



I am very pleased with my efforts to encourage competition among the various 'computerjunk' vendors – one of them phoned me to thank me for the fact that PC PLUS readers bought 300 keyboards at £10 each from him; I told him to keep the

bargains coming, and he said that he will. By the way, if you still want keyboards, Matmos (0444 482091) tells me that there are still some cheap ones left. Vendors – write and tell me about your bargains and I'll pass on the best of them.

The rules are simple. It doesn't have to be fast, or big, or the latest whatever. You don't need to offer support, or a three month warranty. All it has to be is remarkably good value, with a guarantee that it works on arrival or a full refund.

GLOBE TROTTING

Last month I went to Sweden to do two seminars. The Zenith Minisport accompanied me on my travels, and I really think it's all most people should need as a travelling companion. I wrote a long article about cryptography while in transit, called 'Crypto is easy' – it really isn't as complex as people make out.

Next month it's back to the Land of Oz, where I'm doing two gruelling weeks of seminars on PC Security, with a 24-hour

sleepless journey before and after.

I've learned from my last trip – the most direct route is the best, as the refuelling stops are the worst part. They wake you up, chivvy you off the plane, put you in an uncomfortable airport lounge, and then herd you all back on to the plane again. As you approach Australia, they insult you by spraying the cabins with some kind of insecticide/germicide; the viruses I show at the seminar are kept safely in a diskette box. Australians are nice friendly people, though.

THE BOREDOM FACTOR

One of the biggest problems of long distance flights is boredom – it's a big mistake to amuse yourself by drinking the free alcohol. A computer is a good friend in this situation (when bored that is, not drunk) but battery life becomes a crucial issue as most laptops last just a few hours. That's why I also take my NEC 8201a – it's biggest advantage is that it takes gold-top batteries, which last well and are easily changeable.

It's biggest disadvantage is the small memory, only 28K. I can fill that in about three hours typing. The solution is going to be the Zenith; when the NEC is full, I'll bring out the Zenith and use it back-to-back, to store the contents of the NEC. I can then erase the NEC memory, and start again.

So if you read in the papers about some lunatic trying to set up a computer network five miles above the Pacific Ocean, you'll understand the reasons. And if you want to know what I write on a 747, read the *Daily Telegraph*, and the User Group newsletter *Connectivity*. With any luck, the work that I do on that Jumbo will go a long way to paying my air fare.

difficult. The video output from your SLT is of a type called 'analogue' while your CGA monitor requires a signal of the 'TTL' type. The two are completely incompatible.

Even if you managed to find a device to convert the signal to the correct electronic format it still wouldn't work since your CGA monitor can't display enough lines for a VGA image. Sell the CGA monitor and buy a VGA instead. Even a mono VGA (costing less than £100) would work.

FIREWORKS

 In your February issue you reviewed a product called Sparks (in the shareware column) but you don't say where you can get it. I'd like to use this in our 200 or so offices. Can you tell me where I can obtain a copy?
Ian Truscott, St Albans

Sparks is a very nice little screen saver utility. The point of shareware is that you can get it all over the place – there are no 'official' channels. You could try Shareware Publishing (0297) 24088, the PDSL (0892) 663298 or almost any electronic bulletin board for shareware. You'll find that most shareware authors are quite happy to sell site licences for their products.

THREE IN ONE

 1/ Why aren't all the pages of PC PLUS numbered? The advertising pages have to be counted through by hand to find a particular one.
2/ Will my Amstrad 2086 work in France where the voltage is 220V?

3/ When I am using the computer it causes interference on the radio but not on the television. Can anything be done about this?

Harry F Waddy
Teddington

1/ There are several reasons for the dearth of numbers. One is that full bleed advertisements (ones that go to the very edge of the page) leave no room for a number. However, that isn't a good excuse for the others. Our advertisement production people are working to provide more page numbers as you can now see.
2/ Yes.

3/ All computers produce radio waves, and have to meet the radio emission requirements of various national statutory bodies as a result of this. Even so, computer radio noise is very noticeable in the medium wave bands. The faster the computer, the more radio 'noise' it produces. This is because the tracks on the circuit boards turn into more efficient aerials at higher speeds.

Only encasing the whole thing in earthed metal really helps, one of the reasons for metal cases. Lining a plastic case with Aluminium foil and earthing it helps, though it's a fiddly job. The monitor also produces radio noise. Listening on the FM bands is the best solution. Moving the radio away and using a remote speaker is the simplest alternative.

In my youth some slower mainframe computer circuits produced audio frequency noise. Programmers would write programs that caused them to emit the frequencies required to play tunes. Much more fun than writing stock control programs.

THANKS FOR THE MEMORY

 I have an Apricot Zen S PC nearing the end of its guarantee period. As standard this machine comes with 1 Mbyte of memory. I would like to upgrade it with an additional 4 Mbytes. However, I have noticed that Apricot memory modules are more expensive than other 'own brand' upgrades, and considerably more expensive than third party options.

While I am prepared to pay extra for quality and reliability, I am rather reluctant to pay for just the name. Is the Apricot upgrade really worth two and half times the price premium over third party options?

LPC Evans
Diss

No, it certainly is not. Companies like Kingston Technologies (a major third party supplier of RAM upgrades for virtually every computer type) are perfectly good alternatives.

Computer memory is not something that comes in unique, proprietary forms – it is simply a commodity. Provided it is the right speed and has the correct internal arrangement, it will work perfectly well. It makes no difference who you buy it from. A good supplier will know what to sell you once you specify your machine (don't deal with one that doesn't unless you are very sure of what you're doing).

You'll find several companies offering memory upgrades in the advertisement pages of PC PLUS.

The PC PLUS Fact Panel Guide

These days there's no such thing as a 'standard' PC – instead we've got a range of different disk sizes, graphics adaptors and hardware add-ons, such as mice, modems and memory boards. This makes the claim that a piece of software 'Runs on IBM Compatibles' a bit meaningless, so we're introducing a fact panel on all our reviews which shows exactly what hardware you need to run the program, and what optional equipment the program can make use of. The fact panel has four sections,

1. Display types.

This section shows the type(s) of screen display supported by the program. Remember that your PC's display type is determined by its combination of display adaptor and monitor, so for example a PC1640 will have a Hercules, CGA or EGA display depending on the MD, CD or ECD monitor in use.

The icons are as follows:

-  80x25 character text-only – runs on any IBM-compatible PC.
-  Displays Hercules monochrome graphics on Hercules-compatible machines.
-  Displays Colour Graphics Adaptor (CGA) quality graphics on CGA, EGA and VGA machines.
-  Displays Enhanced Graphics Adaptor (EGA) quality text/graphics on EGA and VGA machines.
-  Displays Video Graphics Array (VGA) quality text/graphics on VGA machines only.
-  Displays Multi-Colour Graphics Array (MCGA) graphics on MCGA machines.
-  Displays PC1512 16-colour graphics on the PC1512 only.
-  Displays Tandy Graphics Adaptor graphics on Tandy compatible machines.
-  GEM  Windows

Windows and GEM are both Graphical User Interfaces, which adjust automatically to make the best use of   and  displays. Other types may also be supported. You may need to buy Windows or GEM separately.

Programs with just a  work on all IBM-compatible PCs, since all types of display adaptor support a standard text-only mode, which includes the 'IBM graphics character set' –

the boxes, lines and funny faces used by many programs. Monochrome systems may interpret colour text codes (or 'attributes') as flashing, underline etc.

Other icons refer to 'all points addressable' graphics displays, used in business graphics (e.g. Lotus-style spreadsheets), painting and drawing programs, desktop publishers, games and others.

A program may have more than one icon – for example,   means that the software works with both Hercules and CGA adaptors.

2. Issue Disks

This tells you what type of floppy disk the software is supplied on.

-  5.25", 360K floppy, or 1.2Mbyte if marked '1.2'.
-  3.5", 720K floppy, or 1.4 Mbyte if marked '1.4'. One icon means only available on that disk type (though check with your dealer)
-   both types supplied as standard
-  or  5.25 / 3.5 choice – see price for details.

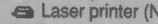
3. Minimum Hardware Requirements

Items in this section are mandatory – either the program won't run at all without them, or would be unusable in practice. The icons are:

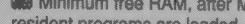
-  Single floppy
-  Twin floppy
-  Hard disk
-  80286 processor chip
-  80386 processor chip
-  Mouse



Joystick



Matrix printer



Laser printer (Note 1)



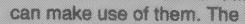
Telephone line and modem



Minimum free RAM, after MS-DOS and any resident programs are loaded.



Expanded Memory Specification (EMS) card (see Note 2)



Maths co-processor chip (e.g. 8087 for standard PCs, 80287 for ATs and so forth)

4. Other hardware supported

These items are not mandatory, but the program can make use of them. The icons are the same as those used in the minimum hardware section.

Notes: 1. Most laser printers will emulate Epson FX series matrix printers, so will work in basic mode with a matrix-only program. A laser driver indicates support for special fonts and high-resolution graphics. Always double check that your particular model of matrix or laser printer is supported.

2. There are various EMS standards around, the most popular being LIM EMS version 4.0. Check that your type is supported by the program.

OUR VALUE VERDICTS

Product fact boxes also contain verdict ratings, in the range 0 - 5, covering four areas of the product – Range of Features, Overall Speed, Ease of use and Documentation – plus an overall Value verdict.

These ratings are made in the context of the program's price and intended position in the market, so a £25 filer which provides good sorting facilities might get a Range of Features rating of 4, while a £600 bells-and-whistles database which couldn't import text data might be marked down to three. The overall value verdict is made on the same basis. It is quite possible for a very expensive product to be excellent value for money because it really does do the job well, while a very cheap product might be poor value because it is too lacking in features to do anything at all.